

NEWS REPORT

NATIONAL ACADEMY OF SCIENCES
NATIONAL RESEARCH COUNCIL



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NEWS REPORT

National Academy of Sciences National Research Council

VOLUME XI

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International Cooperation in Materials Research

D. K. FELBECK, *Executive Director*
Committees on Ship Steel and on Ship Structural Design

ON MAY 10, Detlev W. Bronk, President of the National Academy of Sciences, informed President Nesmeyanov of the Academy of Sciences of the U.S.S.R. of the composition of the group that will participate in a two-week formal inter-Academy exchange visit to the Soviet Union in late June, as the counterpart for the recent visit to the United States of Professors N. N. Rykalin, B. Ye. Paton, and N. O. Okerblom. The three United States participants, representing portions of the fields of materials and welding engineering and metallurgy, are: E. F. Nippes, Rensselaer Polytechnic Institute at Troy, N. Y.; C. E. Hartbower, Manufacturing Laboratories, Inc., Cambridge, Mass.; and the author of this article. This exchange visit is only one of many desirable side benefits that have arisen as a result of an unusual international technical organization: the International Institute of Welding (IIW). As a contribution to the current interest within the Academy-Research Council in international technical cooperation, an examination of the organization of the IIW and some observations of its operation may provide a working example of international cooperation in one branch of engineering.

The IIW is neither a professional society nor a trade organization. It encourages the doing and reporting of research, but it places little emphasis upon the formal presentation of papers and does not even publish transactions, so it is hardly a professional society. On the other hand, the IIW constitution states that "the Institute shall not engage in commercial or trade activities and in particular shall not concern itself with prices, wage rates, markets or agencies," so it cannot qualify as a trade organization. It might best be called a process-oriented organization of broad scope. When the IIW was formed in 1948 its goal was simple: "to promote the development of welding by all processes." That it has adhered to this goal, even while becoming deeply involved in such sensitive matters as international standards, is to the credit of the founders and leaders of IIW.

Each member country (of which there are now 29) is represented through one or more national member organizations concerned with welding or topics related to welding research. In the United States the member organizations are the inter-agency Ship Structure Committee, the American Welding Society, and the Weld-

ing Research Council. Each country pays dues through its member organizations; the amount varies from a high of about \$1,700 for heavily industrialized countries to a modest \$93. In addition, a portion of the registration fee of each participant in the annual congresses is earmarked for support of the IIW operation. The budget for 1961 is about \$19,000. Probably more than a hundred times this amount of money is spent each year by the member countries for research and engineering studies that are discussed at the congresses.

At the heart of the IIW are its fifteen permanent commissions: I—Gas Welding and Allied Processes; II—Arc Welding; III—Resistance Welding; IV—Documentation; V—Testing, Measurements, and Control of Welds; VI—Terminology; VII—Standardization; VIII—Hygiene and Safety; IX—Behaviour of Metals Subjected to Welding; X—Residual Stresses and Stress Relieving; XI—Pressure Vessels, Boilers, and Pipelines; XII—Special Arc Welding Processes; XIII—Fatigue Testing; XIV—Welding Instruction; and XV—Fundamentals of Design and Fabrication for Welding. In fact, the permanent work of these commissions, which meet regularly between and at the annual assemblies, is the most prominent and characteristic feature of the IIW.

Participation by representatives of the Academy-Research Council's Committee on Ship Steel and Committee on Ship Structural Design for the past six annual congresses has centered upon Commission IX (Behaviour of Metals Subjected to Welding), which is responsible for the fields of weldability and brittle fracture. The senior United States delegate to Commission IX is R. W. Vanderbeck of the U. S. Steel Corporation; and working with him is a continuing group of approximately 14 United States participants about half of which attends any given annual congress. Under the broad objective of the IIW mentioned earlier, Commission IX directs its efforts toward understanding what qualities make a material amenable to welding, what materials are suitable for welded structures, and what basic parameters influence the mechanisms of fracture; in addition, the reasons for the observed properties are

sought with equal vigor. At its week-long annual meeting, Commission IX learns of recent studies in the several pertinent fields of interest, defines additional questions for study, and, through subcommissions which meet between the annual congresses, pursues the work in detail. Sponsorship for this research is provided voluntarily by the participants' organizations. Much additional research stimulated by Commission IX activity is conducted independently in many countries and the results presented annually to the Commission. Reports of the work of subcommissions can be published in existing journals in any country after release by a commission.

If the above description of the operation of the IIW constituted the whole story, the IIW could be said to be worthwhile but without lustre. In practice, the sessions of the IIW are also a springboard for continuing professional contacts among research men and practicing engineers from many different countries. For United States research people, visits to European laboratories and universities have become a vital adjunct to their participation in the annual congresses of the IIW. The value of the specific information obtained during these visits cannot be estimated, but the greater awareness of different approaches to current problems has been worth many times the time and money costs of the visits.

In 1961 the situation was reversed when the IIW met in New York. For the first time in its existence a meeting was held outside Europe. Many visitors from around the world took this opportunity to travel extensively in the United States to pay calls on their United States colleagues with whom they were acquainted as a result of previous IIW meetings. At least two two-day conferences were held before or after the IIW meetings in New York: Massachusetts Institute of Technology held a research-review meeting for all the members of Commissions IX and X (Residual Stresses), and the University of Illinois held an invitation symposium on welding research at which all eight papers were presented by visitors from abroad.

Surely an organization that fosters this kind of relationship among engineers from many countries will promote international

understanding and good will. It has already promoted the process of welding, and at the same time it has brought together and often created lasting friendships among people with diverse interests extending far beyond the field of welding, such as metallurgists, naval architects, materials engineers, designers, and even physicians. The research programs of groups such as the Ship Structure Committee have benefited enormously from the regular participation of their researchers at these meetings. That these people can communicate effectively

in an atmosphere of mutual respect while their respective diplomats and politicians experience great barriers to any kind of contact suggests a pathway out of some of the dilemmas facing the world. A former president of the IIW, P. Goldschmidt-Clermont of Belgium, expressed this idea extremely well:

If peoples are divided by ideologies, they are united by science and technical work: understood in its widest sense, technology, which draws its substance from the profoundest human thought, represents an advanced form of culture and humanism. It is a pledge of wisdom and of peace.

SCIENCE NEWS

ANNUAL MEETING NATIONAL ACADEMY OF SCIENCES

The ninety-eighth annual meeting of the National Academy of Sciences was held in Washington, April 24-26, with more than 255 members in attendance. The program included scientific sessions on Monday, April 24, and Wednesday, April 26; the presentation of Academy medals on Monday evening, followed by scientific exhibits and demonstrations and a reception for the medalists and guests; business sessions on Tuesday, April 25, for the election of officers and members and the transaction of other business; and the annual Academy dinner on Tuesday evening, preceded by the president's reception.

Of extraordinary interest was the visit of President John F. Kennedy to address the business session of the Academy on Tuesday morning. In his brief remarks, President Kennedy saluted the Academy for nearly a century of devoted public service and, noting the increasingly important role played by science and technology in the consideration of national problems, declared that the nation's leaders stand in ever greater need of the Academy's continuing guidance.

In addition to the sessions for contributed papers, there were two symposia of invited papers. On Monday morning and afternoon Farrington Daniels of the University of Wisconsin served as chairman of a

symposium on Research Frontiers in Solar Energy Utilization; the presentations began with his survey of research fields and needs. Other speakers were Hugh L. Dryden and A. E. von Doenhoff, National Aeronautics and Space Administration; V. A. Baum, Krzhizhanovskiy Power Institute, Academy of Sciences of the U.S.S.R., Moscow; Harry Tabor, National Physical Laboratory of Israel, Jerusalem; George O. G. Löf, Denver, Colorado; Bertrand A. Landry, Battelle Memorial Institute; Paul Rappaport, Radio Corporation of America (Princeton); R. R. Heickes and L. Dykstra, Westinghouse Corporation (Pittsburgh); and Eugene L. Rabinowitch, University of Illinois. The subjects covered solar energy in the exploration of space; research in the U.S.S.R.; selective surfaces, solar collectors and heat engines; salt water distillation; storage of heat and electricity; design of thermoelectric materials; and photochemistry.

The second symposium, on Tectonophysics, was held on Wednesday afternoon. The Chairmen, H. H. Hess of Princeton University and G. J. F. MacDonald of National Aeronautics and Space Administration, spoke on oceanic ridges and free oscillations of the Earth, respectively. Other speakers were William Kaula, National Aeronautics and Space Administration; F. A. Vening Meinesz, Amersfoort, the Netherlands; R. Dicke, Princeton University; V. V. Belousov, Academy of Sci-

ences of the U.S.S.R., Moscow; and E. Orowan, Massachusetts Institute of Technology. Their topics were: spherical harmonics of the Earth's gravity field; spherical harmonics of the Earth's topography, mantle currents, origin of continents, and geosynclines; the gravitational constant; development of the Earth and tectogenesis; and mechanics of the deformation of the Earth.

Thirty-nine contributed papers on a wide variety of subjects were presented in the other scientific sessions. Abstracts of these were printed in *Science*, Vol. 133, pp. 1363-1370, April 28, 1961.

In addition, five distinguished scientists from Bolivia, Brazil, Chile, and Peru read invited papers in the Wednesday morning session: Carlos Chagas, University of Brazil, Rio de Janeiro, spoke on the action of curare on the electric fish; Ismael Escobar, Cosmic Ray Laboratory, Chacaltaya, La Paz, Bolivia, on a short-lived cosmic-ray decrease on November 13, 1960; Gustavo Hoecker, University of Chile, Santiago, on some recent work on transplantation antigens; Alberto Hurtado, University of San Marcos, Lima, Peru, on man and altitude; and Crodowaldo Pavan, University of Sao Paulo, Brazil, on desoxyribonucleic and ribonucleic acids and protein metabolism in polytene chromosomes.

Six Academy medals were presented at the Monday evening ceremony. The Henry Draper Medal, for original investigation in astronomical physics, was presented to Martin Schwarzschild, Princeton University Observatory; the Daniel Giraud Elliot Medal, for the most meritorious work in zoology or paleontology published each year, to Philip J. Darlington, Jr., Museum of Comparative Zoology, Harvard University; the Kimber Genetics Medal, for achievement in the science of genetics, to John Burdon Sanderson Haldane, Indian Statistical Institute, Calcutta; the Jessie Stevenson Kovalenko Medal, for contributions to medical science, to Karl Friederich Meyer, George Williams Hooper Foundation, University of California; the Mary Clark Thompson Medal, for most important services to geology and paleontology, to Norman Dennis Newell, American Museum of Natural History; the James Craig Watson

Medal, for noteworthy astronomical discoveries or research, to Otto Heckmann, Hamburg-Bergedorf Observatory.

The election of officers and new members on Tuesday morning and the Academy dinner is reported elsewhere in this issue of *NEWS REPORT*. The afternoon business session on Tuesday was devoted to the presentation of reports and the discussion of Academy undertakings.

While the members were attending the business session, their lady guests enjoyed a visit to "Kenmore" (the home of Colonel Fielding Lewis) and other places of interest in Fredericksburg, Virginia.

ANNUAL DINNER OF THE NATIONAL ACADEMY OF SCIENCES

Eighteen distinguished scientists from 11 foreign countries were guests of the Academy at its annual dinner Tuesday, April 25, in the Presidential Room of the Statler Hilton Hotel in Washington. Among the guests from abroad were three foreign associates of the Academy; representatives of senior scientific institutions of France, Great Britain, the Netherlands, and the Soviet Union; the chairman of the National Science Development Board of the Philippines; and participants in the scientific sessions of the Academy meeting.

Approximately 375 members and guests of the Academy attended the dinner, which followed a reception in the Congressional Room by President Bronk.

The foreign guests were:

Australia—Sir Ronald Fisher, University of Adelaide (foreign associate)

Brazil—Carlos Chagas, University of Brazil; Crodowaldo Pavan, University of Sao Paulo

Chile—Gustavo Hoecker, University of Chile

France—J. Benoit, College de France

Great Britain—Sir Patrick Linstead, Foreign Secretary, The Royal Society

Israel—Harry Tabor, National Physical Laboratory of Israel

The Netherlands—V. J. Koningsberger, Vice President, Royal Netherlands Academy of Sciences; F. A. Vening Meinez, Amersfoort (foreign associate)

Peru—Alberto Hurtado, University of San Marcos
Republic of the Philippines—Paulino J. Garcia, Chairman, National Science Development Board

Sweden—Hugo Theorell, Nobel Institute of Medicine (foreign associate)

U.S.S.R.—V. A. Baum, Krzhizhanovskiy Power Institute; V. V. Belousov, Member, Academy of Sciences, U.S.S.R.; N. N. Bogolyubov, Member, Academy of Sciences, U.S.S.R.; V. A. Kargin, Member, Academy of Sciences, U.S.S.R.; V. P. Pavlichenko, Member, Academy of Sciences, U.S.S.R.; A. V. Topchiev, Vice President, Academy of Sciences, U.S.S.R.

ELECTION OF OFFICERS AND MEMBERS NATIONAL ACADEMY OF SCIENCES

At the annual business meeting of the Academy on April 25, J. A. Stratton, President of the Massachusetts Institute of Technology, was elected to a four-year term as Vice President of the Academy. George B. Kistiakowsky, Professor of Chemistry at Harvard University, and Kenneth B. Raper, Abbott and James Lawrence Professor of Bacteriology and Botany at the University of Wisconsin, were elected members of the Council of the Academy for three-year terms to succeed Thomas Francis, Jr., University of Michigan, and Saunders Mac Lane, University of Chicago, who will complete their terms on June 30, 1961.

The following new members and foreign associates were elected to the Academy:

New Members:

DANIEL I. ARNON, Professor of Cell Physiology, University of California at Berkeley
WILLIAM OLIVER BAKER, Vice President-Research, Bell Telephone Laboratories, Inc.
SEYMOUR BENZER, Professor of Biophysics, Purdue University
HARRY ALFRED BORTHWICK, Chief Plant Physiologist, Agricultural Research Service, U. S. Department of Agriculture
ROBERT HARZA BURRIS, Professor of Biochemistry, University of Wisconsin
SHING-SHEN CHERN, Professor of Mathematics, University of California at Berkeley
PRESTON ECELLE CLOUD, JR., Research Geologist, U. S. Geological Survey
JULIUS HIRAM COMROE, JR., Director, Cardiovascular Research Institute, University of California at San Francisco
DONALD JAMES CRAM, Professor of Chemistry, University of California at Los Angeles
JAMES FRANKLIN CROW, Professor of Medical Genetics, University of Wisconsin
LAWRENCE STAMPER DARKEN, Associate Director, Edgar C. Bain Laboratory for Fundamental Research, United States Steel Corporation
CARL DJERASSI, Professor of Chemistry, Stanford University

WILLIAM VON EGGERS DOERING, Professor of Organic Chemistry, Yale University
RENATO DULBECCO, Professor of Biology, California Institute of Technology

ALFRED IRVING HALLOWELL, Professor of Anthropology, University of Pennsylvania

BERNARD LEONARD HORECKER, Professor of Microbiology, New York University School of Medicine

ROLLIN DOUGLAS HOTCHKISS, Member and Professor, Rockefeller Institute

LIEBIE HENRIETTA HYMAN, Research Associate, American Museum of Natural History

MARK GORDON INGHAM, Professor of Physics, University of Chicago

WILLIAM NUNN LIPSCOMB, Professor of Chemistry, Harvard University

HERMAN FRANCIS MARK, Director, Polymer Research Institute, Polytechnic Institute of Brooklyn

HANS NEURATH, Professor of Biochemistry, University of Washington

GEORGE EMIL PALADE, Member and Professor, Rockefeller Institute

ROBERT VIVIAN POUND, Professor of Physics, Harvard University

LORRIN ANDREWS RIGGS, Professor of Psychology, Brown University

RICHARD BROOKE ROBERTS, Staff Member, Department of Terrestrial Magnetism, Carnegie Institution of Washington

PER FREDRIK SCHOLANDER, Professor of Physiology, Scripps Institution of Oceanography

CHARLES DONALD SHANE, Astronomer, Lick Observatory

DONALD CLAYTON SPENCER, Professor of Mathematics, Princeton University

HENRY MELSON STOMMEL, Professor of Oceanography, Harvard University

LEO SZILARD, Professor of Biophysics, University of Chicago

JOHN WILDER TUKEY, Professor of Mathematics, Princeton University

FREDERICK THEODORE WALL, Professor of Chemistry, University of Illinois

ALVIN MARTIN WEINBERG, Director Oak Ridge National Laboratory

JOHN HARRY WILLIAMS, Professor of Physics, University of Minnesota

Foreign Associates:

KEITH EDWARD BULLEN, Professor of Applied Mathematics, University of Sydney, Sydney, Australia

BORIS EPHRUSSI, Director, Laboratoire de Génétique Physiologique du Centre National de la Recherche Scientifique, Gif-sur-Yvette, France

WERNER HEISENBERG, Director, Max Planck Institut für Physik und Astrophysik, Munich, Germany

VLADIMIR PRELOG, Professor of Organic Chemistry, Swiss Federal Institute, Zurich, Switzerland

COMMITTEE ON FIRE RESEARCH

Howard W. Emmons of Harvard University is chairman of the summer study on fire research, organized and conducted by the Committee on Fire Research, to be held at Woods Hole, Mass., July 17 to August 11, 1961, and supported by the National Science Foundation. A group of scientists and engineers, invited both from the United States and from abroad, will conduct an intensive four-week study and will present the status of research directed at better understanding of the prevention and control of unwanted fires.

The program is wide in scope and a broad over-all point of view is indicated by the many different fields of specialization of the scientists who have been invited. Intensive detailed studies will be made by specially appointed working groups with the assistance of additional specialists who are on call to come to Woods Hole for participation in specific limited subjects.

Some twenty-six subjects are included in the first week of lectures; thereafter, an arabesque of detailed studies will ensue for two weeks, with the last week devoted to efforts toward better coordination and appreciation of the many-faceted problems of destructive fires in peace time and during wars. It is hoped that the purpose of the summer study will be consummated in recommendations of areas of research that promise to contribute significantly to increased knowledge, and consequently control, of our growing present-day fire problem.

FOOD CHEMICALS CODEX

The Food Protection Committee of the Food and Nutrition Board has undertaken a project to prepare a compilation of standards of identity and purity of chemicals used in foods. To be known as a "Food Chemicals Codex," the project is supported by a research grant from the U. S. Public Health Service and contributions from interested industries and associations. Justin L. Powers, until recently Director of Revision of the National Formulary, has been appointed Director of the project which will run for 3-5 years (*see p. 44*).

RESEARCH ASSOCIATESHIPS IN MATHEMATICS

The Office of Naval Research (ONR) has announced the award of six postdoctoral research associateships in mathematics for the academic year 1961-62. These awards were made upon the recommendation of the Committee on Mathematics Advisory to ONR. The recipients of the research associateships are listed below, together with their fields of research and the institution making the appointment:

- FRANK T. BIRTEL, Functional Analysis (Banach Algebras), Yale University
IRWIN FEINBERG, Partial Differential Equations, Columbia University
ADRIANO M. GARSIA, Differential Geometry, California Institute of Technology
GEORGE W. HENDERSON, Fixed Point Theory, University of Virginia
JESUS GIL DE LAMADRID, Functional Analysis, Topology, Yale University
JAMES D. REID, Abstract Algebra, Yale University

CONFERENCE ON THE GERIATRIC AMPUTEE

Because the number of amputees in the older age groups is increasing yearly and because very little attention has been given to the problems of older amputees, the Committee on Prosthetics Research and Development organized and sponsored a two-day conference on the Geriatric Amputee. Held at the National Academy of Sciences Building on April 13 and 14, the conference was divided into six panels that met independently and simultaneously the first day and the morning of the second day to consider assigned problems.

On the afternoon of April 14, after a brief demonstration of some of the results of the Artificial Limb Program, the chairman of each panel reported to the conference as a whole and to the invited guests. Panel topics were vascular and amputation surgery, medical management, prosthetics management, energy and biochemical implications, sensory and neuromuscular implications, and psychosocial implications.

The Committee plans to prepare a report of the conference to be published by the Academy-Research Council later this year.

K. S. KRISHNAN

The untimely death of Kariamanikkam S. Krishnan, Foreign Associate of the National Academy, has deprived the members of the Academy-Research Council of a cherished friend and honored colleague. Dr. Krishnan, well-known scientist and Director of the National Physical Laboratory in New Delhi, India, died of a heart attack on June 14 shortly before a planned visit to this country, where he would have been a welcome guest.

Outstanding among the scientists of his country, Dr. Krishnan was particularly noted for his work with C. V. Raman on the project which resulted in the discovery of the "Raman Effect", for which the latter was awarded the Nobel Prize for Physics. Dr. Krishnan was one of three members of the Indian Atomic Energy Commission and a member of the Science Advisory Committee to the Cabinet. He was also honored by election to fellowship in the Royal Society in 1940 and was knighted in 1946.

Throughout his career as a dedicated scientist, Dr. Krishnan was associated with most of the significant scientific organizations of his country and held many honors, including the Padma Bhusan awarded to him in 1953. His publications include papers on optics, magnetism, electronics, and the physics and chemistry of solids.

CONFERENCE ON PROJECT VELA UNIFORM

On April 29th, the 1961 Annual Conference of the Division of Earth Sciences was held in the Academy-Research Council Building under the co-chairmanship of Frank Press, California Institute of Technology, and James T. Wilson, University of Michigan. Seven invited participants presented papers on the various scientific aspects of Project *Vela Uniform*, a plan for the establishment of a world-wide seismic network to determine the feasibility of detecting underground nuclear explosions. The proposed network is of particular interest to geophysicists for the information it may yield on the origin and mechanics of earthquakes and on the thickness and composition of the earth's crust.

FOOD AND NUTRITION BOARD

The Food and Nutrition Board held its 59th meeting in the Academy-Research Council Building on May 12.

The Board announced that its Committee on Fats had been reconstituted under the chairmanship of Charles Davidson, Thorndike Memorial Laboratory, Boston City Hospital. This committee will evaluate new information accumulated since publication of the Board's 1958 report on "The Role of Dietary Fat in Human Health." The committee is to prepare a revision or supplement to that report, particularly the part dealing with dietary fat and cardiovascular disease.

A new Subcommittee on Environmental Nutrition was appointed under the chairmanship of D. M. Hegsted, Harvard School of Public Health. This subcommittee will be concerned with the variations of nutritional requirements of individuals as affected by climatic conditions, closed environmental systems, shelter confinement and other environmental stresses.

The Committee on Dietary Allowances was reorganized under the chairmanship of Wendell H. Griffith, Medical Center, University of California, Los Angeles.

The Committee on Infant Nutrition reported progress in 1) better definitions of criteria for evaluation of infant development, 2) review of nutrient requirements, and 3) pointing out needed research to solve present problems.

The Committee on Amino Acids, with the Board's endorsement, proposed 1) to critically examine methods and terminology extant for expressing amino acid requirements, 2) to study amino acid proportionality patterns in tissues as affected by diet, 3) to evaluate amino acid requirements further, and 4) to explore methods for evaluation of optimal protein levels and the effects of excesses.

The program of the Committee on Protein Malnutrition in support of research on development of protein resources in protein-deficient countries is supported by a grant of \$550,000 from the Rockefeller Foundation and closely integrated with the action programs of the United Nations Children's Fund (UNICEF), the Food and Agri-

culture Organization, and the World Health Organization of the United Nations.

The Committee on International Nutrition Programs was set up under the chairmanship of L. A. Maynard, School of Nutrition, Cornell University, with the primary objective of seeing that proper attention be given to nutrition in the multiple programs designed for technological aid and economic development under governmental, United Nations, or private organizations.

As a follow-up, the committee proposed that a brochure be prepared which would point out the futility of programs that ignore the multiphasic nature of improving standards of living in underdeveloped countries and emphasize the necessity of co-operative relationships among programs of all specialities. In this setting, nutrition has an important position which must fit into health, economics, and agricultural programs in practice as well as preachment.

Another international activity is the co-operation between the Board and the U. S. National Committee of the International Union of Nutritional Sciences in establishing a classification of knowledge of food and nutrition information for coding and machine retrieval. Paul György, Philadelphia General Hospital, and R. W. Engel, Virginia Polytechnic Institute, are taking the leadership in this endeavor.

The dinner meeting of the Board was addressed by Nelson Post, Assistant Director of the Food-for-Peace Program, and Frank B. Berry, Assistant Secretary of Defense for Health, in regard to the program of the Interdepartmental Committee on Nutrition for National Defense.

FULBRIGHT AWARDS

The Committee on International Exchange of Persons, Conference Board of Associated Research Councils, is issuing in June 1961 an announcement of 1962-63 awards authorized under the Fulbright Act for university lecturing and advanced research in the participating countries of Europe, the Near and Middle East, the Far East, and the British Overseas Territories. Closing date for making application will be October 1, 1961.

Awards for 1962-63 are offered in: Austria, Belgium and Luxembourg, China

(Taiwan), Denmark, Finland, France, Germany, Greece, Iceland, Iran, Ireland, Israel, Italy, Japan, Korea, the Netherlands, Norway, Portugal, Spain, Sweden, Turkey, the United Arab Republic, the United Kingdom, and the United Kingdom Overseas Territories in Africa, Asia, and the Mediterranean area.

Detailed information and application forms may be obtained from the Committee on International Exchange of Persons.

DESALINATION RESEARCH STUDY

The Division of Chemistry and Chemical Technology is sponsoring for the Office of Saline Water of the U. S. Department of the Interior a 4-week summer study on desalination research at Woods Hole, Mass., from June 19 to July 14. Invited participants include representatives of Government agencies, industry, private research institutions, and universities whose interests cover the fields of chemistry, engineering, biology, oceanography, physics, plant physiology, geography, meteorology, and economics.

Monday morning, June 19, will be spent in registration; after the usual introductory talks the keynote speech of the afternoon will be given by Edward A. Ackerman, Carnegie Institution of Washington, on "What is the water problem?" The following day will be spent on background materials and June 21 and 22 will be devoted to a symposium on industrial processes under the chairmanship of Thomas K. Sherwood, Massachusetts Institute of Technology. The objective is to provide an opportunity for the presentation of research needs and problems from the industrial point of view. A general discussion of the subjects and program of the conference will take up all day Friday, June 23.

During the second and third weeks of the study (June 26-July 7), the presentations and discussions of a variety of topics should provide the group with information on 1) the state of the art; 2) indication of what studies are being conducted by whom, and where; 3) probable future trends; and 4) critical areas that have been or may be neglected. The final week (July 10-14) will be devoted to panel meetings and discussions for the preparation of the first draft of a report of the study.

JOINT SYMPOSIUM ON RADIOASTRONOMY

In October 1959, the National Academy of Sciences proposed to the Academy of Sciences of the U.S.S.R. the holding of a symposium in the United States in the field of radioastronomy. This proposal was in fulfillment of the provision of article seven of the Inter-Academy Exchange Agreement, which states that both signatories "agree on the desirability of conducting, in the U.S.S.R. and the U.S.A., joint symposia on current scientific problems in specialized fields." At the request of President Detlev W. Bronk, Otto Struve, Director of the National Radio Astronomy Observatory at Green Bank, W. Va., graciously agreed to make plans and arrangements for the symposium. On the Soviet side, planning was in the hands of A. G. Masevich of the Astronomical Council of the Academy of Sciences of the U.S.S.R. and V. V. Vitkevich, both recent visitors in the United States. By mutual agreement between the American and Soviet organizers, the symposium was scheduled for May 15-20, at Green Bank and Washington, D. C. Participating along with about thirty American radioastronomers were six Soviet scientists: V. V. Vitkevich, P. D. Kalachev, A. D. Kuzmin, and R. L. Sorochenko of the Lebedev Physics Institute, Moscow; G. G. Getmantsev of the Gorkiy State University; and V. A. Sanamyan of the Byurakan Astrophysical Observatory in Armenia. Opening ceremonies took place at the National Academy of Sciences on May 15, with greetings by President Bronk and Dr. Struve. Professor Vitkevich brought greetings from Academician A. N. Nesmeyanov, President of the Academy of Sciences of the U.S.S.R., while Professor Sanamyan brought them from Academician V. A. Ambartsumian, President of the Academy of Sciences of the Armenian Soviet Socialist Republic and a Foreign Associate of the National Academy of Sciences. At Green Bank, during May 16-19, the American and Soviet scientists discussed galactic and extragalactic radioastronomy. Following the symposium the Soviet guests visited the Department of Terrestrial Magnetism of the Carnegie

Institution of Washington, and several of them paid a visit to the University of Michigan Observatory.

COMMITTEE ON MATHEMATICAL FILMS AND TELEVISION

The Committee on Mathematical Films and Television held its third meeting, April 15 and 16, at Wayne State University. The Committee heard reports on current trends in mathematics education with David Page of the University of Illinois speaking on developments in mathematics in the elementary schools, and G. Baley Price, Executive Secretary of the Conference Board of the Mathematical Sciences, describing the present programs at the secondary school and college levels. Films made for these projects were screened.

The problem of the collection and dissemination of information on science and mathematics films was discussed with presentation of the programs of curriculum revision and other groups now producing such films in the United States by Richard Paulson of the National Science Foundation. International exchange of films and film information was described by W. H. Pearson of the Motion Picture Attestation Service of the United States Information Agency. The newly formed American Science Film Association will be an excellent channel for such international and national exchanges between groups concerned with scientific and mathematical films and television.

The Committee decided to undertake a pilot project of review of existing mathematical films, and to consider the production, together with other mathematical organizations, of special films and courses in mathematics. The special films might include experimental films; short subjects (by animation); special lectures, as of an eminent mathematician lecturing on his speciality; mathematical subjects suitable for a "visiting lecture" program on film; and demonstration classes. Complete film courses, with emphasis on the great need for such mathematics courses in teacher training institutions and for summer institutes and in-service institutes for teachers of mathematics, will also be considered.

BEHAVIORAL SCIENCE AND CIVIL DEFENSE

The first annual meeting of the Office of Civil and Defense Mobilization-National Research Council Advisory Committee on Behavioral Research was held at the National Academy of Sciences Building on May 18 and 19. The two-day meeting was organized as a symposium on "Behavioral Science and Civil Defense" with Leonard S. Cottrell, Jr., Secretary of the Russell Sage Foundation, serving as chairman.

The Thursday morning session, May 18, was devoted to "The OCDM Problem: Its Scope and Some Research Needs;" the afternoon session considered the problem of "An Adequate Civil Defense Under Cold War Conditions." "Psychological and Social Vulnerabilities and Civil Defense" was the theme of the third session on Friday morning. The closing session on Friday afternoon was entitled "Stress and Recovery."

In addition to Dr. Cottrell, Chairman of the Advisory Committee as well as of the symposium, the main speakers for the four sessions were:

- KENNETH E. BOULDING, Department of Economics, University of Michigan
ROGERS S. CANNELL, Manager of Industrial and Civil Defense Research, Stanford Research Institute
RALPH L. GARRETT, Director, Social Sciences Division, OCDM
HERMAN KAHN, Physics Department, The Rand Corporation
CHARLES P. LOOMIS, Department of Sociology and Anthropology, Michigan State University
EDWARD A. McDERMOTT, Deputy Director, Office of Civil and Defense Mobilization
WILBERT E. MOORE, Department of Economics and Sociology, Princeton University
JUNI C. NUNNALLY, JR., Department of Psychology, Vanderbilt University
CHARLES S. SHAFER, Director, Plans Office, Chemical, Biological, and Radiological Defense, OCDM
EUGENE J. SLEEVY, Director, Briefing Division, Public Affairs, OCDM
LOUIS J. WEST, Department of Psychiatry, Neurology, and Behavioral Sciences, University of Oklahoma

Attending the symposium were representatives of Government agencies, universities, private research organizations, and a group of Canadians with similar interests.

The proceedings of the symposium are now being edited and will be published by the Academy-Research Council.

CHEMICAL NOTATIONS SYSTEMS PROJECT

The Division of Chemistry and Chemical Technology and the Office of Documentation are jointly administering a one-year study of chemical notation systems under a grant of \$56,000 from the National Science Foundation.

Chemists first became interested in the use of notation systems for structures of chemical compounds as possible substitutes for names, many of which do not identify compounds uniquely and unambiguously. It was believed that a notation could be made to do so more easily than a system of nomenclature and might have other advantages as well. Furthermore interest in the possibilities of using machines to handle scientific information has been growing rapidly, and chemists have devised a number of notation or coding systems for representing chemical structures in mechanized information systems.

The notation system devised by G. Malcolm Dyson of England, now Director of Research for the Chemical Abstracts Service, formed the basis of the international standard adopted in 1959 by a commission of the International Union of Pure and Applied Chemistry; at the same time, the commission recommended certain revisions in the notation, and it is expected that the revised edition will be published soon. This international notation and a number of other systems are being used for a variety of purposes, some systems having been designed primarily for use with punched card equipment and others for use with computers, and some being suitable for use in printed lists or indexes and others for mechanized structure searching only.

The purpose of the new study is a thorough analysis of the characteristics of the various systems, the similarities and differences among them, the uses now being made of them, the criteria which led to their adoption or development, the problems encountered in their use, the potentialities of each system for more widespread use, the needs not met by existing systems, and the purposes that might be served by agreement among chemists on the use of one or more standardized systems.

The study will be directed on a part-time basis by I. Moyer Hunsberger, Dean of the College of Arts and Sciences, University of Massachusetts. He will be assisted by the following advisory group:

GEORGE P. HAGER, College of Pharmacy, University of Minnesota, *Chairman*
 PAUL N. CRAIG, Smith, Kline and French Laboratories
 DONALD DORWARD, Chemical Abstracts Service, Ohio State University
 ROBERT A. HARTE, Research Laboratories, Merck, Sharp & Dohme
 FRANC A. LANDEE, Dow Chemical Company
 J. SCOTT MACLENNAN, Research Division, American Cyanamid Company
 ELIOT STEINBERG, Warner-Lambert Research Institute
 FRED A. TATE, Wyeth Laboratories
 K. H. ZABRISKIE, Engineering Department, E. I. du Pont de Nemours & Company

NATURAL RESOURCES RESEARCH STUDY

The Academy has undertaken a study of natural resources at the request of President Kennedy (*see NEWS REPORT Vol. XI, No. 2, p. 21*). A committee of ten Academy members has been named by President Detlev W. Bronk to provide firstline guidance to the various panels among which the projects will be subdivided. An exploratory and organizational meeting was held jointly with the Federal Council for Science and Technology and the President's Science Advisor, Jerome B. Wiesner, on May 9 in the Board Room of the Academy. A small staff is now being formed. President Kennedy's letter to Dr. Bronk stated that he "was most anxious to have the Academy initiate an evaluation of the present research on behalf of conservation and development of America's natural resources."

The committee members are as follows:

GILLILAND EDWIN, Massachusetts Institute of Technology
 GEORGE HARRAR, Rockefeller Foundation
 M. KING HUBBERT, Shell Development Company
 PHILIP MORSE, Massachusetts Institute of Technology
 SUMNER PIKE, Lubec, Maine
 ROGER REVELLE, Scripps Institution of Oceanography
 ATHELSTAN F. SPILHAUS, University of Minnesota
 PAUL WEISS, The Rockefeller Institute
 GILBERT WHITE, University of Chicago
 ABEL WOLMAN, Johns Hopkins University

SCIENTISTS FROM AFRICA VISIT THE UNITED STATES

In early May 1961, the Academy sponsored a two-week visit to the United States by the following seven representatives of the Commission for Technical Cooperation in Africa South of the Sahara (CCTA) and the Scientific Council for Africa South of the Sahara (CSA), pursuant to a request of the International Cooperation Administration:

LOUIS VAN DEN BERGHE, Vice President, CSA; Director General, Institut pour la Recherche Scientifique en Afrique Centrale (IRSAC); and founder member, CSA
 THOMAS A. LAMBO, Director, Nigerian Central Mental Health, Western Nigerian Government; associated lecturer and consultant psychiatrist, University College, Ibadan; member, CSA
 C. J. MARTIN, Statistical Advisor, Government of Kenya; Director, East African Statistical Department, member, CSA
 THEODORE A. MONOD, Director, Institut Français d'Afrique Noire (IFAN); Professor at the Museum of Natural History, Paris; founder member, CSA
 E. POSTEL, ORSTOM, Natural History Museum, Paris; Inter-African Coordinator, Oceanography and Sea Fisheries, CCTA/CSA
 M. CLAUDE CHEYSSON, Secretary-General, CCTA/CSA; member, French Diplomatic Service
 E. T. VERDIER, Scientific Secretary, CCTA/CSA; former Professor of Inorganic and Analytical Chemistry, University of Natal, South Africa

During their stay in Washington, a joint meeting was held with the Academy's Advisory Committee on Africa South of the Sahara. On Friday evening, May 5, the President of the Academy and the Chairman of the Academy Committee were host to the foreign guests at a dinner given in their honor at the Cosmos Club.

Included in the program arranged for the members of the Scientific Council were discussions with representatives of both federal and private agencies, and visits to scientific institutions in Washington, New York, Princeton, New Haven, Woods Hole, Chicago, and Atlanta. These visits afforded an opportunity for direct contact between United States scientists and their counterparts in Africa and will, without doubt, encourage a continuing interchange of scientific ideas and information between scientists of both continents.

STAFF APPOINTMENTS

The Division of Biology and Agriculture has announced the appointment of **Justin L. Powers** as Director of the Food Chemicals Codex, a new project of the Food Protection Committee. Dr. Powers majored in science and pharmacy at the University of Michigan and received his Ph. D. degree in pharmaceutical chemistry from the University of Wisconsin. From 1940 until his retirement in 1960, he was with the American Pharmaceutical Association as Director of the revision of the National Formulary, editor of *Drug Standards*, and from 1940 to 1947, director of the Association's Laboratory.

George A. Lipsky has been appointed a Professional Associate in the Office of International Relations, where he will handle special assignments for the Director. Dr. Lipsky is a graduate of the University of Washington and holds a Ph. D. degree in political science from the University of California (1948). Before coming to the Academy-Research Council, he was Senior Research Associate and Team Chairman, Foreign Areas Studies Division, Special Operations Research Office at American University. Dr. Lipsky has also served as an Instructor at the U. S. Military Academy, Assistant Professor at the University of California, Visiting Lecturer at Yale University, and Associate Professor at American University.

The Office of Information has announced a reorganization of its staff with the appointments of **Robert R. Hume** and **James A. Seddon, Jr.** Mr. Hume, formerly Director of Publications and Public Information of the Field Service Division of the International Association of Chiefs of Police (IACP), will provide editorial support to other staff units in the preparation of manuscripts for publication by the Academy-Research Council. Prior to his association with IACP, Mr. Hume served in similar capacities with the Traffic Institute and Transportation Center of Northwestern University, and before that was Assistant Managing Editor for educational publications with Rand McNally and Company.

Mr. Hume's appointment frees **Mrs. Josephine Andoe Williams** to devote a greater portion of her time to editorial responsibili-

ties related to the publication of the monthly *Proceedings of the National Academy of Sciences* and the Academy's annual volume of *Biographical Memoirs*. Mrs. Williams will undertake other editorial assignments, in particular the preparation of commemorative volumes for the centenary of the Academy.

Mr. Seddon will assist the Director of the Office in the preparation of material describing Academy-Research Council activities for distribution to affiliated scientific and technical societies, scientific agencies of the Government, and to the general public through news media. He received his A. B. degree in 1954, from Harvard University, where he majored in biochemistry.

The Division of Chemistry and Chemical Technology has announced the appointment of the following staff members for the Chemical Notations Systems Project: **I. Moyer Hunsberger**, Dean of the College of Arts and Sciences, University of Massachusetts, will serve as part-time Director of the Project; and **Donald E. H. Frear**, Department of Agricultural and Biological Chemistry of Pennsylvania State University; **Robert E. Harmon**, Cancer Chemotherapy National Service Center at the National Institutes of Health; and **Elbert G. Smith**, Mills College, will serve as Professional Associates. For project details, see p. 42.

Monroe H. Martin, Director of the Institute for Fluid Dynamics and Applied Mathematics and Professor of Mathematics at the University of Maryland, has again been appointed Executive Secretary of the Division of Mathematics beginning July 1, succeeding **Harold W. Kuhn**, Associate Professor Mathematical Economics at Princeton University.

Dr. Martin previously served as Executive Secretary of the Division from July 1955 to July 1957; and again from July 1958 to July 1959 when Dr. Kuhn received a senior postdoctoral fellowship by the National Science Foundation to spend a year's study and research at the London School of Economics. The following academic year, 1959-60, Dr. Martin held a Guggenheim Fellowship, spending six months in this country and six months in Scotland and Italy at the universities at St. Andrews and Rome.

RECORD OF MEETINGS

March		March	
3	Committee on Textile Fabrics, Task Group on Design of Fabrics, <i>New York City</i> Planning Committee for Desalination Research Study	14	Planning Committee on Systems of Preassembled Panel Construction, <i>Cambridge, Mass.</i> Ad hoc Committee on Insulation Research Subcommittee on Food Sanitation
4	American Miscellaneous Society, Project Mohole Committee, <i>CUSS I</i>	15	Committee on Ship Structural Design, Advisory Committee SR-158, <i>Providence, R. I.</i>
6	Graduate Fellowship Panel		Federal Construction Council, Task Group T-41 on Non-Slip Traffic Surfaces
6-7	Committee on Climatology, Advisory to the U. S. Weather Bureau, <i>Asheville, N. C.</i>	17	Federal Construction Council, Task Group T-46 on Continuously Operated Diesel Engines for Electric Power Generation Committee on the Cardiovascular System
6-11	Armed Forces—National Research Council Committee on Bio-astronautics, Panel on Acceleration Stress, <i>Palo Alto, Calif.</i>	20	Committee on Radiation Sources, <i>Natick, Mass.</i>
7	Committee on Ship Structural Design, Advisory Committee SR-157, <i>New York City</i> Committee on Radiation Preservation of Food, <i>Chicago</i> Working Group 10 on Visual Standards	20-21	Panel on Coastal Geography, <i>Baton Rouge, La.</i>
7-8	Refractory Metals Sheet Rolling Panel	21	Ad hoc Committee on Western Reserve University Grant
8	Food Protection Committee Committee on Adhesives and Sealants, Sealants Subcommittee, <i>New York City</i>	22	AASHO Road Test, Statistical Panel, <i>Chicago</i> Committee on Animal Products, <i>Chicago</i>
8-9	Committee on Nutrition, Task Group, <i>Chicago</i>	23	Committee on Ship Steel, Advisory Committee SR-162
9	Division of Engineering and Industrial Research, Executive Committee	24	Ad hoc Subcommittee on Radionuclides, <i>Ithaca, N. Y.</i> Advisory Committee on Tropical Medicine
9-11	National Research Council, Annual Meeting		U. S. National Committee, International Union of the History and Philosophy of Science Planning Committee on Usage of Doors, <i>New York City</i> Subcommittee on Carbohydrates, <i>St. Louis</i>
10	Division of Medical Sciences, Annual Meeting Division of Chemistry and Chemical Technology, Annual Meeting Division of Engineering and Industrial Research, Annual Meeting Division of Mathematics, Annual Meeting Building Research Institute, Programs Steering Committee, <i>Newark, N. J.</i>	25	American Geophysical Union, Executive Committee of the Council Working Group on Frequency Allocation for Radio Astronomy
13	Highway Research Board, Steering Committee of Executive Committee Committee on Ship Steel, Advisory Committee SR-147, <i>Cambridge, Mass.</i> Federal Construction Council, Task Group T-45 on Boilers	27	Committee on Ship Structural Design and Ship Structure Subcommittee, Joint Meeting Subcommittee on Personnel and Training
14	Committee on Ship Structural Design, Advisory Committee SR-153, <i>Boston</i> Committee on International Exchange of Persons, Local Members	27-29	Symposium on Three-Dimensional Space Perception
		28	Committee on Ship Structural Design Planning Committee on Plastics in Building, <i>New York City</i> Committee on Fire Research Technical Conference on the Use of Models in Fire Research

March		April	
29	Special Advisory Committee on Maximum Continuous Temperatures for Vapor Barrier Conference on Electrical Insulation, Executive Committee Committee on Ship Steel and Ship Structure Subcommittee, Joint Meeting Advisory Board on Quartermaster Research and Development, <i>Chicago</i> Working Group 5 on Visual Problems in Space Travel Armed Forces-National Research Council Committee on Vision, Executive Council	12 12-13 12-15 13-14 14 15	Committee on Prosthetics Research and Development Conference on Freeze Drying of Foods, <i>Chicago</i> Spring Seminar for Visiting Fulbright Scholars Conference on the Geriatric Amputee Subcommittee on Waste Disposal Building Research Institute, Executive Committee, <i>New York City</i> Committee on Inter-American Scientific Cooperation Committee on Regional Development of Mathematics, <i>Chicago</i>
30	Seminar on Higher Education in the Americas Committee on Ship Steel	16-18 17	Working Group 6 on Visual Displays, <i>Rome, N. Y.</i> Panel on Solid Earth Problems, Working Group I Panel on Solid Earth Problems, Working Group II
30-31	Armed Forces-National Research Council Committee on Vision	18-21	American Geophysical Union, Annual Meeting
31	Advisory Board on Quartermaster Research and Development, <i>Chicago</i> Committee on Subsistence Packaging, <i>Chicago</i> Highway Research Board, Executive Committee Planning Committee for Desalination Research Study, <i>Woods Hole, Mass.</i>	19 20	Rigid, Flexible, and Composite Pavement Committee, Joint Meeting, <i>LaSalle, Ill.</i> AASHO Road Test, Subcommittee for Report No. 2, <i>LaSalle, Ill.</i> AASHO Road Test, National Advisory Committee, <i>LaSalle, Ill.</i> Ad hoc Subcommittee on Prosthetics Clinical Studies
April			Committee on International Exchange of Persons
3	AASHO Road Test, Data Analysis Panel, <i>Chicago</i> Subcommittee on Water Supply	21	Ad hoc Subcommittee on Prosthetics in Medical Education
4	Federal Construction Council, Operating Committee	22	American Geophysical Union, Council
6	Committee on Textile Functional Finishing, <i>Natick, Mass.</i> U. S. National Committee, International Union Against Cancer, <i>Atlantic City</i> Advisory Committee for Chemical Notations Systems Project	23 24-25	Division of Earth Sciences, Executive Committee National Academy of Sciences-National Research Council, Governing Board
7	Federal Construction Council, Task Group T-45 on Boilers Advisory Board on Quartermaster Research and Development, <i>Natick, Mass.</i>	24-26 25	Special Advisory Committee on Design Criteria for Residential Slabs-on-Ground, <i>Dallas</i> National Academy of Sciences, Annual Meeting
9	U. S. National Committee, International Union of Biochemistry, <i>Atlantic City</i>	25-28	Committee on the Skeletal System, Seminar Program Subcommittee American Geophysical Union, Annual Meeting
10-11	Ad hoc Committee on Review of Microbiological Deterioration Test Procedures	26 27	Planning Committee for Desalination Research Study Federal Construction Council, Operating Committee
11	Committee on International Exchange of Persons, Local Members		Committee for Research in Problems of Sex
12	Advisory Board on Education	27-28	Medical Fellowship Board

April

- 27-28 Symposium on Tectonophysics, Princeton, N. J.
- 28 Highway Research Board, Department Chairman
- Committee on Seismological Stations, Advisory to the Department of Defense
- Subcommittee on Transfusion Problems

April

- 28 Federal Construction Council, Task Group T-42 on Criteria for Acceptance of Cast Iron Soil Pipe
- 29 Subcommittee on Radiobiology
- Division of Earth Sciences, Conference on Project VELA UNIFORM
- 30 Advisory Committee for Chemical Notations Systems Project

NEW PUBLICATIONS

American Geological Institute. *Glossary of Geology and Related Sciences . . . with Supplement*. 2nd ed. Washington, 1960. [397] p. \$7.50. (Available from: American Geological Institute, 2101 Constitution Ave., Washington 25, D. C.)

Anders, Edward. *The Radiochemistry of Technetium*. Washington, NAS-NRC, Committee on Nuclear Science, Subcommittee on Radiochemistry, 1960. (Nuclear Science Series; Report No. [30-21]) 50 p. \$0.50. (Available from: Office of Technical Services, Dept. of Commerce, Washington 25, D. C.)

Armed Forces-National Research Council Committee on Bio-Astronautics. Panel on Psychology. *Sensory and Perceptual Problems Related to Space Flight . . . Edited by John L. Brown*. Washington, 1961. (NAS-NRC Publication 872.) 51 p.

Barton, F. W., and Hall, W. J. *Studies of Brittle-Fracture Propagation in Six-Foot-Wide Steel Plates with a Residual Strain Field*. Washington, NAS-NRC. 1961. (Ship Structure Committee. Serial No. SSC-130.) 49 p.

Bascom, Willard. *A Hole in the Bottom of the Sea*. Garden City, N. Y., Doubleday and Co., 1961. 352 p., illus. \$4.95. (Available from: Doubleday and Co., Garden City, N. Y.)

Berkner, Lloyd V., and Odishaw, Hugh, eds. *Science in Space*. New York, McGraw-Hill Book Co., 1961. 458 p. \$7.00. (Available from: McGraw-Hill Book Co., 330 W. 42nd St., New York 36, N. Y.)

Conference on Transportation Research, Woods Hole, Mass., 1960. *Transportation Design Considerations. Selections from the Proceedings . . .* Washington, 1961. (NAS-NRC Publication 841.) 243 p. \$4.00.

Conference on Transportation Research, Woods Hole, Mass., 1960. *U.S. Transportation Resources, Performance and Problems*. Washington, 1961. (NAS-NRC Publication 841S.) 319 p. \$4.00.

Dabbs, J. W. T., and Walter, F. J., eds. *Semiconductor Nuclear Particle Detectors; Proceedings of an Informal Conference, Asheville,*

N. C., September 28-30, 1960. Washington, 1961. (NAS-NRC Publication 871. Nuclear Science Series; Report No. 32.) 280 p., illus. \$2.50.

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Dyer, F. F., and Leddicotte, G. W. *The Radiochemistry of Copper*. Washington, NAS-NRC, Committee on Nuclear Science, Subcommittee on Radiochemistry, 1961. (Nuclear Science Series; Report No. [30-27]) 54 p. \$0.75. (Available from: Office of Technical Services, Dept. of Commerce, Washington 25, D. C.)

Fairhall, A. W. *The Radiochemistry of Magnesium*. Washington, NAS-NRC, Committee on Nuclear Science, Subcommittee on Radiochemistry, 1961. (Nuclear Science Series; Report No. [30-24]) 22 p. \$0.50. (Available from: Office of Technical Services, Dept. of Commerce, Washington 25, D. C.)

Gerathewohl, Siegfried J. *Zero-G Devices and Weightlessness Simulators, a Special Report Prepared . . . February 1960 for the Armed Forces-NAS-NRC Committee on Bioastronautics, Panel on Acceleration*. Washington, 1961. (NAS-NRC Publication 781.) 143 p., illus.

Harmon, Lindsey R., and Soldz, Herbert. *The Science Doctorates of 1958 and 1959, Their Numbers, Characteristics and Employment. Prepared for the National Science Foundation by the National Academy of Sciences-National Research Council*. Washington, U. S. Govt. Printing Office, 1960. 28 p. \$0.25. (Available from: U. S. Govt. Printing Office, Washington 25, D. C.)

Johnson, A. W., and Sallberg, J. R. *Factors that Influence Field Compaction of Soils. Compaction Characteristics of Field Equipment*. Washington, 1960. (NAS-NRC Publication 810. Highway Research Board Bulletin 272.) 206 p., illus. \$4.00.

- Leddicotte, G. W. *The Radiochemistry of Rhenium*. Washington, NAS-NRC, Committee on Nuclear Science, Subcommittee on Radiochemistry, 1961. (Nuclear Science Series; Report No. [30-28]) 43 p., illus. \$0.50. (Available from: Office of Technical Services, Dept. of Commerce, Washington 25, D. C.)
- Momyer, Floyd F., Jr. *The Radiochemistry of the Rare Gases*. Washington, NAS-NRC, Committee on Nuclear Science, Subcommittee on Radiochemistry, 1960. (Nuclear Science Series; Report No. [30-25]) 55 p. \$0.75. (Available from: Office of Technical Services, Dept. of Commerce, Washington 25, D. C.)
- National Research Council. Advisory Committee on Civil Defense. *Proceedings of the Meeting on Environmental Engineering in Protective Shelters*. Washington, NAS-NRC, 1961. 316 p.
- National Research Council. Building Research Institute. *Performance of Buildings*. Washington, 1961. (NAS-NRC Publication 879.) 90 p. \$5.00.
- National Research Council. Committee on Prosthetics Research and Development. *The Application of External Power in Prosthetics and Orthotics. A Report on a Conference . . . Held at the University of California Conference Center, Lake Arrowhead, California, September 22-25, 1960*. Washington, 1961. (NAS-NRC Publication 874.) 156 p., illus.
- National Research Council. Committee on Soil and Water Conservation. *Principles of Resource Conservation Policy with Some Applications to Soil and Water Resources*. Washington, 1961. (NAS-NRC Publication 885.) 50 p.
- National Research Council. Food Protection Committee. *Science and Food: Today and Tomorrow. Proceedings of a Symposium, December 8, 1960*. Chairman: Detlev W. Bronk. Washington, 1961. (NAS-NRC Publication 877.) 73 p.
- National Research Council. Highway Research Board. *Asphalt Characteristics and Asphaltic Concrete Construction*. Washington, 1960. (NAS-NRC Publication 808. Highway Research Board Bulletin 270.) 60 p., illus. \$1.40.
- National Research Council. Highway Research Board. *Flexible Pavement Design Studies 1960*. Washington, 1960. (NAS-NRC Publication 802. Highway Research Board Bulletin 269.) 74 p., illus. \$1.60.
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- National Research Council. Institute of Laboratory Animal Resources. *Laboratory Animals; I, Guide for Shipments of Small Laboratory Animals*. Washington, 1961. (NAS-NRC Publication 846.) 21 p., illus. \$1.50.
- National Research Council. Nuclear Data Project. *1960 Nuclear Data Tables*. Washington, U. S. Govt. Printing Office, 1961. 4 Parts: 1, \$1.50; 2, \$2.75; 3, \$1.25; 4, in preparation, approx. \$1.25. (Available from: U.S. Govt. Printing Office, Washington 25, D. C.)
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- Roesmer, J., and Kruger, P. *The Radiochemistry of Mercury*. Washington, NAS-NRC, Committee on Nuclear Science, Subcommittee on Radiochemistry, 1960. (Nuclear Science Series; Report No. [30-26]) 50 p. \$0.50. (Available from: Office of Technical Services, Dept. of Commerce, Washington 25, D. C.)

Notice of Academy Meetings

NATIONAL ACADEMY OF SCIENCES

Autumn meeting, University of California at Los Angeles, October 30-November 1, 1961

NATIONAL ACADEMY OF SCIENCES-NATIONAL RESEARCH COUNCIL

Governing Board, Washington, D. C., October 8, 1961

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*The search for Truth is in one way hard
and in another easy. For it is evident that no one
can master it fully nor miss it wholly. But each adds
a little to our knowledge of Nature, and from all
the facts assembled there arises a certain grandeur.*

—ARISTOTLE

